

DOCUMENT RESUME

ED 266 622

EC 182 040

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TITLE Expression of Communicative Intentions by Young Hearing-Impaired Children.
PUB DATE 23 Nov 85
NOTE 16p.; Paper presented at the Annual Convention of the American Speech-Language-Hearing Association (12th, Washington, DC, November 22-25 1985).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Communication Skills; *Deafness; *Language Acquisition; Preschool Education; Toddlers; *Total Communication

ABSTRACT

The study examined actual communicative expressions of five 3-year-old profoundly, prelingually deaf children and their mothers, along with nonverbal contextual information. Each subject was videotaped in the home while interacting with the mother in toy play and usual daily activity. Results identified more than 4,500 communicative expressions, generally limited to one or two formal signs plus elements typically considered to be pre- or para-linguistic. Three conclusions were drawn: (1) learning impaired children learning total communication, who are at the beginning levels of formal language, produce frequent and effective expression of communicative intention; (2) they are in some instances able to override linguistic limitations and produce highly specific communicative intentions beyond those seen in younger hearing children at similar formal language levels; and (3) their language use is skewed heavily toward social contact in lieu of information exchange. (CL)

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Expression of Communicative
Intentions by Young Hearing-Impaired Children

Paper Presented at Scientific/Traditional Session
Convention of American Speech-
Language-Hearing Association

Washington, D.C.
November 23, 1985

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Despite widespread use of total communication or simultaneous speech and signs in early programming for hearing-impaired children, many of those children continue to present with significant delays in acquisition of formal language, signed as well as spoken. This delay may be due to lack of sufficient exposure to the language model but it could also be a symptom of organic or social-emotional factors. An important step in the clinician's identification of causal factors in a hearing-impaired child's formal language delay should be determination of whether the child has developed an appropriate communicative base upon which language can be built. Pragmatic analysis should, therefore, be an essential part of the language assessment of hearing-impaired children. The purpose of this study was to contribute to building a descriptive data base for one aspect of a pragmatic assessment—that of measuring the child's expression of communicative intentions. Similar work has been done by Curtiss, Prutting, and Lowell (1979) for pre-school hearing-impaired children in oral programming and by Pien (1985) who worked with younger hearing-impaired children. Both studies utilized coding systems devised for much younger hearing children (in the 9 month to 18 month range).

The study reported here assumed that expression of communicative intentions is influenced by a child's cognitive developmental level and amount of social experience as well as formal language abilities. It would follow that hearing-impaired children, despite a delay in formal language skills, would be able to communicate intentions more complex than those generated by younger hearing children at similar levels of formal language skill. The coding system used for this study indicated categories of com-

municative intention reported for hearing children at chronological ages similar to that of the hearing-impaired subjects (Dore, 1977a; 1977b).

METHODOLOGY

Subjects. Subjects in this study were five three-year-old profoundly, prelingually deaf children from white, middle-class, intact families. They were in pre-school programming using total communication and their parents attended classes in the use of Signed English.

Procedure.

Each child was videotaped in his or her home while interacting with the mother. Three hours of interaction were recorded for each child, during two one and one-half hour sessions. During part of this time, mother and child played with a set of toys provided by the investigator; additional data were recorded as mother and child took part in their usual daily activities.

The data available for analysis included the actual communicative expressions of the child and mother, plus non-verbal contextual information. Communicative expressions were defined to include both formal linguistic and pre-linguistic communicative behaviors which met the following requirements:

1. A social contact was in progress (i.e., the attention of the child and mother was directed toward each other or a mutual object), or the child was attempting to establish a contact through obtaining and directing the mother's attention.
2. The behavior was discrete, that is, the behaviors had a definable beginning and termination.

3. The behavior included one or more of the following elements: formal sign, gesture, change in facial expression, change in direction of gaze.

Information on the tapes was transcribed by the author and a second coder, who was a certified speech pathologist familiar with pragmatic classification and the children's language system. Interrater reliability was estimated by comparison of each coder's independent transcription of 31 minutes of videotaped interaction selected from the first taping sessions. The measure of interrater agreement employed considered both the reliability of mutual identification of communicative expressions and the classification of those expressions by type of communicative intention. The formula used was $A = (U - D) / (U + 1/2X)$ where A =intercoder reliability, U =total number of communicative expressions which were identified by both coders, D =total number of communicative expressions which were coded differently by the two coders, and X =total number of communicative expressions identified by one coder and not the other (Fleiss, Cohen, and Everitt, 1969). A total of 211 communicative expressions were identified independently by the two raters and the obtained coefficient of agreement was .87.

RESULTS

More than 4,500 communicative expressions were identified in the tapes.¹ The children's expressions were generally limited to one or two formal signs plus elements typically considered to be pre- or para-linguistic. Mean Length of Utterance (MLU) was calculated to be between 1 and 2 for all subjects. The expressions showed a general lack of grammatical morphemes, characteristic of Stage I functioning as described by Brown (1973) and his associates.

The left column of Table 1 lists the categories of intention identified in the subjects' communicative expressions (see Appendix for category definitions). The system is hierarchical in nature, with 6 major categories: Description, Request, Conversational Device, Response, Statement, Performative and Uninterpretable. The six are further divided into subcategories. The system was adapted from the work of Dore (1977a; 1977b) with hearing 3-year-olds. He studied formally linguistically coded utterances only, while my analysis included elements usually considered to be pre- or para-linguistic. It was therefore necessary to re-define some of Dore's categories for use in this study. For example, "Description" in my study was usually a label or iconic gesture; in Dore's work, it meant expanded descriptions rather than simple labelling. It was also necessary to add to my coding system categories typically noted in hearing children in the 1 to 1½ year age range. These can be seen especially in the Conversational Device category. For example, "check" was a simple looking up to the parent to ascertain that she was still involved and to signal that the child was still involved in the social contact; directing attention to objects (with pointing or showing the object only) and imitating, also occurred in this category beyond the age at which they are typically observed in hearing children.

As Table 1 illustrates, the largest number of expressions from the group as a whole were in the "Description" category; next was "request;" then "Conversational Device;" then "Response." The small number of observed responses to wh- questions is reflective of the relative lack of

such questions directed to the children. This suggests that hearing-impaired children's mothers, when controlling the level of syntactic complexity in their utterances also modified the content of their utterances. (The latter may not be a productive strategy.) There were very few expressions representing "Statement: Explain" or attributing feelings or states to others. "Express/~~evaluation~~" statements included mostly non-formal expressions of emotions.

Although some variation was seen between subjects, the order of occurrence of major categories of intention across subjects was significantly correlated (see Table 2). The order of incidence of expression of the various intentions for the sample as a whole did not correlate significantly, however, with that reported for Dore's sample of 3-year-old hearing children (Table 3). Making that comparison required deletion and combination of various categories to produce better equivalence, and the difference between eliciting contexts in the two studies may have contributed to the lack of correlation.

DISCUSSION

Findings of this study suggest the following characterizations of the hearing-impaired subjects' developing pragmatic systems: (1) Hearing-impaired children learning total communication, who are at beginning levels of formal language, produce frequent and effective expression of communicative intention. To see the extent of communication achieved, it will be necessary for clinicians to include behaviors typically considered pre- and paralinguistic as a functional part of a language sample. (2) Hearing-impaired children learning total communication are in some instances able

to override linguistic limitations and produce highly specific communicative intentions beyond those seen from younger hearing children at similar formal language levels. An example of the expression of a cognitively and pragmatically complex utterance expressed with minimal formal language is given in the utterance coded "Statement:Explain" described below:

Child and mother are playing with a wind-up toy that is broken. It does not move if wound up but will work briefly if given a push.

Child looks at mother, makes gesture for "wind" while shaking her head "no." Then she smiles and nods "yes" while making sign for "push."

Mother says, "It doesn't work when you wind it, but it does when you push it" while nodding and smiling at child.

These hearing-impaired subject's system of communicative intentions is different from that of their hearing age-peers, however, in that it shows continued reliance on earlier-occurring behaviors in addition to the expression of age-appropriate concepts and functions. (3) In general, the videotaped data plus observations in other situations showed these hearing-impaired children's language use to be skewed heavily toward social contact in lieu of information exchange. This suggests a difference from hearing children not in the range of intentions expressed but in the relative weight or frequency of some categories of communicative intention.

Further work needs to be done to define expectancies for expression of communicative intention in this population for use as a clinical tool. These hearing-impaired children in total communication programming seemed to know they could communicate and thus initiated interactions often. Hearing-impaired children with similar educational opportunities who do not do so, deserve to receive additional diagnostic investigation.

TABLE 1

Number of Occurrences and Percentage of Sample of Each Category of
Communicative Intention for the Combined Sample
Of Hearing-Impaired Subjects

Category	Total	%
<u>Description</u>	<u>1410</u>	<u>26.8</u>
Event	410	7.8
Identity	497	9.5
Location	78	1.5
Possession	87	1.7
Property	338	6.4
<u>Request</u>	<u>1062</u>	<u>20.2</u>
action	462	8.8
object	291	5.5
Wh	134	2.5
Yes/No	175	3.3
<u>Conversational Device</u>	<u>956</u>	<u>18.2</u>
Check	239	4.5
Comment	7	0.1
Direct Attn. (Obj.)	302	5.7
Direct Attn. (Self)	28	0.5
Imitate	287	5.5
Offer	64	1.2
Polite	29	0.6
<u>Response</u>	<u>816</u>	<u>15.5</u>
Agree	208	4.0
Attend	152	2.9
Wh	79	1.5
Yes/No	228	4.3
Clarify	149	2.8
<u>Statement</u>	<u>542</u>	<u>10.3</u>
Attribute	7	0.1
Explain	5	0.1
Express/Eval	530	10.1
<u>Performative</u>	<u>300</u>	<u>5.7</u>
Claim	8	0.2
Game	89	1.7
Joke	82	1.6
Greet	7	0.1
Protest	72	1.4
Role Play	11	0.2
Scold	17	0.3
Warn	8	0.2
Pattern	6	0.1
<u>Uninterpretable</u>	<u>173</u>	<u>3.3</u>
<u>Total</u>	<u>5259</u>	

TABLE 2

Percentage of Sample and Rank Order for Major Categories
of Communicative Intention for Each Subject

Category	Subject A % Rank	Subject B % Rank	Subject C % Rank	Subject D % Rank	Subject E % Rank
Description	13.2 4	31.1 1	30.3 1	35.9 1	23.0 1
Request	30.1 1	16.4 3	17.3 3	19.1 3	18.7 3
Response	16.4 2	21.7 2	10.5 4	12.0 4	15.7 4
Statement	16.2 3	7.9 5	9.7 5	7.3 5	10.7 5
Performative	9.5 6	2.7 7	7.8 6	2.4 7	6.7 6
Conversational Device	11.7 5	15.2 4	22.9 2	20.1 2	21.5 2
Uninterpretable	3.0 7	5.0 6	1.5 7	3.3 6	3.3 7

^aCorrelation across subjects for rank and order of CI categories, = .78
($p < .01$)

TABLE 3

Spearman Rank Order Correlation of Communicative Intentions
Expressed by Hearing-Impaired and Hearing
Three-Year-Old Subjects

Hearing-Impaired Subjects	Hearing Subjects (Dore, 1977a, 1977b)
1 DESCRIPTION	1 REQUEST
2 REQUEST	2 DESCRIPTION
3 CONVERSATIONAL DEVICE	3 RESPONSE
4 STATEMENT	4 STATEMENT
5 RESPONSE	5 PERFORMATIVE
6 PERFORMATIVE	6 UNINTERPRETABLE
7 UNINTERPRETABLE	7 CONVERSATIONAL DEVICE

= .571, $p > .10$ (for entire set of CIs)

= .886, $p < .10$ (with CONVERSATIONAL
DEVICE omitted)

Notes

1. Because some expressions could be coded for more than one communicative intention, the number of intentions coded (5259) is greater than the number of expressions.

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APPENDIX

Brief descriptions of the categories used in the current study are given below:

Expressions coded as REQUEST had as their goal obtaining a response from the communication partner. Depending upon the subcategory, that response could be verbal or non-verbal.

REQUEST/Object: goal of the expression is obtaining an object or substance, regardless of whether action will be required of the partner to fulfill the request.

REQUEST/action: goal of the expression is activity on the part of the communication partner.

REQUEST/yes-no (permission): expression similar in communicative intent to "Is that okay? Is this right? Do you want this?" This category includes expressions through which the child requests to be allowed to do something.

RESPONSE expressions were directly contingent upon a preceding expression or action by the communication partner.

RESPONSE/wh: child responds to a wh-question from the partner. These responses were double-coded in the DESCRIPTION category.

RESPONSE/yes-no: child responds to a yes/no question from partner, such as "Do you want....?" "Is it hot?"

RESPONSE/agree-disagree: child expresses agreement or disagreement with a preceding message from the communication partner.

RESPONSE/attend: child looks up at mother who is doing something or expressing something to the child. Child looks back away, making no other response.

RESPONSE/clarify: child restates an expression by repetition or modification after partner's response indicates lack of understanding. These expressions were double-coded with the communicative intention subcategory of the original expression.

DESCRIPTION expressions functioned essentially as labels for objects, actions, properties, locations, and to mark possession.

DESCRIPTION/identify: child gives label for a person or object.

DESCRIPTION/event: describes an event, activity, or behavior.

DESCRIPTION/property: refers to property of an object such as "hot, cold, empty, pink..."

DESCRIPTION/possession: indicates the owner of a particular object.

DESCRIPTION/location: use of formal linguistic element or pointing to indicate objects or persons that are not present in the immediate environment or are at a distance from the child. (Pointing serves a formal linguistic function in sign language and may either represent a demonstrative and not fit in this subcategory or may be used to represent locations.)

STATEMENT expressions coded information or feelings.

STATEMENT/attribute: child attributes feeling or affective state to other person or object.

STATEMENT/express-evaluate: child expresses his or her own feelings about an occurrence or a situation.

STATEMENT/explain: child expresses knowledge of a causal relationship between object or action and event.

PERFORMATIVE expressions actually perform the function represented in the communicative intention. For example, saying or waving "hello" constitutes the act of greeting someone. All except the last two subcategories used in this group could be considered to be "speech acts" as typically defined. For this study, however, sensorimotor-level expressions were included as well as those expressed through formal linguistic means.

PERFORMATIVE/scold: child reprimands another for an action or event.

PERFORMATIVE/warn: child alerts or reminds partner of possible harm.

PERFORMATIVE/pattern: child rote counts or signs an alphabet sequence.

PERFORMATIVE/claim: child establishes own right to have control of an object or activity.

PERFORMATIVE/greet: child acknowledges arrival of person or notice of that person.

PERFORMATIVE/role play: child establishes an imaginary role or identity. These expressions were double-coded as DESCRIPTION/identity.

PERFORMATIVE/protest: child expresses objection to an action or state. These expressions are differentiated from STATEMENT/express-evaluate in that protests must occur as a response to a preceding event or pre-existing state; must be a clear rejection of the existing situation and be an attempt to change that situation.

PERFORMATIVE/joke: expressions must include a laugh or "play face" (Blurton-Jones, 1974) or a smile as one element. Child intentionally does something he or she considers to be funny and shares this feeling with the communication partner. Child must be the initiator of the funniness and not simply be responding to partner's joke.

PERFORMATIVE/game: behaviors like those in PERFORMATIVE/joke but must be second in a sequence of amusing behaviors.

The category of CONVERSATIONAL DEVICES included expressions which attempt to begin or continue social contact but do not express specific informational content. These subcategories were used when no more specific code was appropriate.

CONVERSATIONAL DEVICE/direct attention (self): child waves, taps partner's arm, etc., in an attempt to get partner's attention.

CONVERSATIONAL DEVICE/direct attention (object): child holds up object or points to it in order to direct partner's attention to object.

CONVERSATIONAL DEVICE/check: After a social contact has been established, and child has looked away from partner, child changes direction of gaze to look again at partner. Goal is to maintain contact or check to see that partner's attention is still directed to child or mutually-attended object.

CONVERSATIONAL DEVICE/imitate: When possible, double-check with the communicative intention which the imitation serves. Imitation of a sign or gesture for which no other function can be ascertained is coded in this subcategory only. It is assumed that these cases function either as a practice as the child tries to remember the sign or as a device to fill the child's conversation turn.

CONVERSATIONAL DEVICE/polite: use of specific politeness markers such as "sorry, please, thank you."

CONVERSATIONAL DEVICE/comment: expressions without specific information content which serve to mark completion of an activity or to acknowledge notice of an event or message.

A final category of UNINTERPRETABLE was used to code those expressions for which no meaningful intention could be inferred from context or the behaviors produced.